SG72460M

Web Smart 10/100/1000
24-Port Ethernet Switch
with SFP support

Installation Guide

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(2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

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WARNING: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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EN 55022: Limits and Methods of Measurement of Radio Interference characteristics of Information Technology Equipment.

EN 50082/1: Generic Immunity Standard -Part 1: Domestic Commercial and Light Industry.

EN 60555-2: Disturbances in supply systems caused by household appliances and similar electrical equipment - Part 2: Harmonics.

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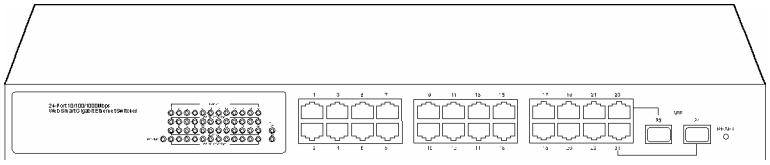
1. Introduction

Before you start installing the switch, verify that the package contains the following:

- Web Smart 24-Port 10/100/1000 Gigabit Ethernet Switch unit
- 19" rack mounting brackets
- This User Manual in CD-ROM
- AC Power Cord



1.1 Features

- Non-blocking store-and-forward Web-Smart switched.
- 24 10/100/1000Mbps Auto-negotiation Gigabit Ethernet copper ports
- 2 1000Mbps Gigabit Ethernet fiber ports (support dual media types, fiber and copper)
- 400KB on-chip frame buffer
- Jumbo frame support
- Diversified classification supports for QoS (even L4 support)
- 8K MAC address and 4K VLAN support (IEEE802.1Q)
- Per-port bandwidth rate control and Broadcast Storm Control
- IEEE802.1Q VLAN support
- Full-duplex flow control (IEEE802.3x) and half-duplex backpressure
- Extensive front-panel diagnostic LEDs; System: Power, Copper Port1-24: LINK/ACT, 10/100/1000Mbps and SFP LINK/ACT

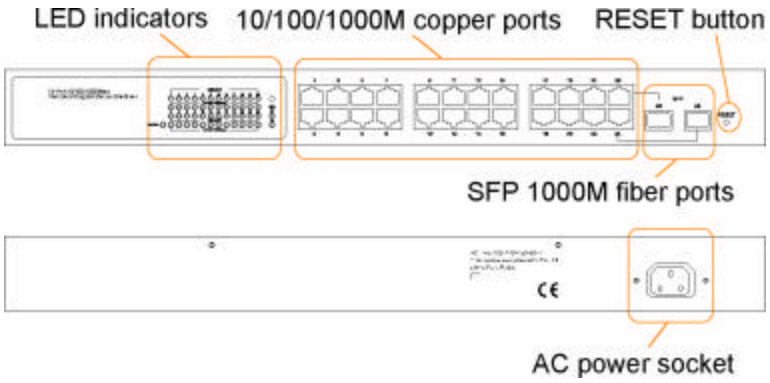
Management

- Supports concisely the status of port and easily port configuration
- Supports per port traffic monitoring counters
- Supports port mirror function
- Supports the static trunk function
- Supports 802.1Q VLAN
- Supports user management and limits one user to login
- Maximal packet length can be up to 9216 bytes for jumbo frame application
- Supports Broadcasting Suppression to avoid network suspended or crashed
- Supports to send the trap event while monitored events happened
- Supports default configuration, which can be restored to overwrite the current working configuration on via Web UI and Reset button of the switch
- Supports on-line plug/unplug SFP modules
- Supports Quality of Service (QoS) for real time applications based on the information taken from Layer 2 to Layer 4, such as VoIP
- Built-in web-based management with convenient GUI for the user

1.2 View of Web Smart 24-Port Gigabit Switch

The major user interface components on the front panel and rear panel are:

•LED indicators	LED Display for system power status and port status
•10/100/1000M copper ports	Gigabit copper ports (Port 1 - Port 24)
•1000M SFP fiber ports	Gigabit fiber ports with SFP connectors (Port 23, Port 24)
•RESET button	Button for reboot the switch or reset the switch to factory defaults
•AC power socket	Power socket for AC power cord



LED	Color	Function
System POWER	Green	ON - when +5V DC power is on and good
Port 1~24 LINK/ACT	Green	ON - when connection with remote device is good
		Blink - when any traffic is present
		Off - when cable connection is not good
Port 1~24 10/100/1000Mbps	G/E	ON - green when 1000Mbps speed is active
		ON - ember when 100Mbps speed is active
		Off - when 10Mbps speed is active
Port 23, 24 SFP	Green	ON - when connection with remote device is good
		Blink - when any traffic is present
		Off - when cable connection is not good

1.3 Hardware Specifications

Standard Compliance: IEEE802.3/802.3ab / 802.3z / 802.3u / 802.3x

Network Interface:

Configuration	Mode	Connector	Port
10/100/1000Mbps Gigabit Copper	NWay	RJ-45	1 - 24
1000Base-X Gigabit Fiber	1000 FDX	SFP*	23, 24(Option)

*Port 23, 24 are RJ-45/SFP fiber dual media ports with auto detected function.
*Optional SFP modules support MMF, SMF LC or BiDi LC transceiver.

Transmission Mode: 10/100Mbps support full or half duplex, 1000Mbps support full duplex only

Transmission Speed: 10/100/1000Mbps for Gigabit copper ports, 1000Mbps for Gigabit Fiber ports

Full Forwarding Packet Rate: PPS (packets per second)

Forwarding Rate	Speed
1,488,000pps	1000Mbps
148,800pps	100Mbps
14,880pps	10Mbps

MAC Address and Self-learning: 8K MAC address

VLAN Table: 4K VLAN table entries

Buffer Memory: Embedded 400 KB frame buffer

Flow Control:
IEEE802.3x compliant for full duplex
Backpressure flow control for half duplex

Cable and Maximum Length:
Gigabit copper Cat. 5 UTP cable Cat.5e recommended, up to 100m
Gigabit fiber 50/125, 60/125 MMF, 9/125 SMF, distance (depending on the SFP transceiver)

Diagnostic LED:

System LED:	Power
Port 1 - 24 10/100/1000M:	Speed status
Port 1 - 24 LINK/ACT:	Link status and activities
Port 23, 24 SFP:	SFP fiber link status

Power Requirement: Voltage 100 - 240 VAC, Frequency 50/60 Hz, Consumption 30W

Ambient Temperature: Operating 0 to 50°C, Humidity 5% to 90%

Dimensions: 44(H) x 442(W) x 209(D) mm

Approval: Comply with FCC Part 15 Class A & CE Mark Approval

1.4 Management Software Specifications

Interface: Web Http browsing

System configuration: IP address settings, system name, password, Auto-logout timer

Port configuration: Port operating mode, flow control

VLAN configuration
VLAN mode: Disable, Port-based, 802.1Q Tag-based, Metro (predefined Port-based)
VLAN groups: Up to 24 active groups, Group ID, description, VID, member ports
VID value range: 1 - 4094
Port VID range (PVID): 1 - 4094
Per Port Ingress Rules: Forward packets with VID=PVID, Drop untagged packets
Per Port Egress Rules: Port Tagging mode, Un-tagging specific VID packets

Link Aggregation (Trunking) Configuration
Trunks: up to 8 groups
Trunk port members: up to 8 ports

Mirroring Function
Sniffer mode: Ingress traffic of the source ports
Sniffer port: one port
Source ports: multiple ports are allowed

Quality of Service (QoS)
Priority class: High and low
Per port classification options: 802.1p, IP ToS, IP DSCP, IP TCP/UDP Port (L4 base)

Bandwidth Control
Per port basis control
Ingress Rate control: All traffic rate, Unicast rate, Broadcast/Multicast rate
Egress Rate control: All traffic rate

Trap Event Control
System events: Cold boot, Warm boot
Port events: Port link up, port link down, Invalid login, Tx error, Rx error
Event counters

Max. Packet Length Control:
Per port basis control
Option: 1518, 1532, 9216 (Jumbo frame support)

Statistics Monitoring: Per port basis control, Simplified port statistics, Detailed port statistics

Status Monitoring: All configuration current settings, All port link status

Maintenance:
Warm Restart (i.e. Reboot, Warm Boot)
Restore Factory default, Software update
Logout

2. Installation

2.1 Safety Cautions

To reduce the risk of bodily injury, electrical shock, fire, and damage to the equipment, observe the following precautions.

- Do not service any product except as explained in your system documentation.
- Opening or removing covers may expose you to electrical shock.
- Only a trained service technician should service components inside these compartments.
- If any of the following conditions occur, unplug the product from the electrical outlet and replace the part or contact your trained service provider:
  - The power cable, extension cable, or plug is damaged.
  - An object has fallen into the product.
  - The product has been exposed to water.
  - The product has been dropped or damaged.
  - The product does not operate correctly when you follow the operating instructions.
- Do not push any objects into the openings of your system. Doing so can cause fire or electric shock by shorting out interior components.
- Operate the product only from the type of external power source indicated on the electrical ratings label. If you are not sure of the type of power source required, consult your service provider or local power company.

2.2 Desktop Mounting

The switch can be mounted on a desktop or shelf. Make sure that there is proper heat dissipation from and adequate ventilation around the device. Do not place heavy objects on the device.

2.3 Applying Power

One AC power cord, which meets the specification of your country of origin was supplied with the switch unit. The switch supports wide range of AC power input specifications as follows:

Power Rating: 100 ~ 240VAC, 50/60Hz, 30W max.
Voltage Range: 90 ~ 264VAC
Frequency: 47 ~ 63 Hz

2.4 SFP Transceiver Installation

Verify the following Steps when installing an SFP transceiver into an empty SFP port:

1. Use the SFP transceivers qualified only by switch manufacturer.
2. The switch supports Hot-plug installation of the SFP transceiver even when the switch is on.
3. Make sure the transceiver is seated in the SFP port securely.
4. Install the fiber cable after the transceiver installation.

2.5 Port and Cable

Connection	Cables
10/100M copper connection	Cat.3, 4, 5, Cat.5 is recommended
1000M copper connection	Cat. 5, 5e, Cat. 5e is recommended
1000M fiber connection	MMF or SMF depending on the SFP transceiver used

2.6 Rack Mounting

Two 19-inch rack-mounting brackets are supplied with the switch for 19-inch rack mounting. The steps to mount the switch onto a 19-inch rack are:

1. Turn the power to the switch off.

2. Install two brackets with supplied screws onto the switch.

2. Mount the switch onto 19-inch rack with rack screws securely.

3. Turn the power to the switch on.

2.7 RESET Button

The reset button is located on the front panel. The button provides the following functions:

Operation	Function
Press the button more than 3 second	Restore the switch back to factory default settings
Press the button less than 3 seconds	Reboot the switch

2.8 Software Management

It will take about 30 seconds, after that, the switch will flash all the LED once and automatically performs a self-test and is in the ready state. The switch features an http server, which can serve the management requests coming from any web browser software over internet or intranet network.

Web Browser

- Microsoft IE 6.0 above recommended, Netscape V7.1 above or FireFox V1.00 above
- Display resolution 1024x768.

Set IP Address for the switch unit

Before the switch can be managed from a web browser software, make sure a unique IP address is configured for the switch.

2.9 IP Address Settings and Changing Password

The switch is shipped with the following factory default settings:

- IP address of the switch: 192.168.1.1
- Subnet Mask of the switch: 255.255.255.0
- Default Gateway of the switch: 192.168.1.254
- Password: admin

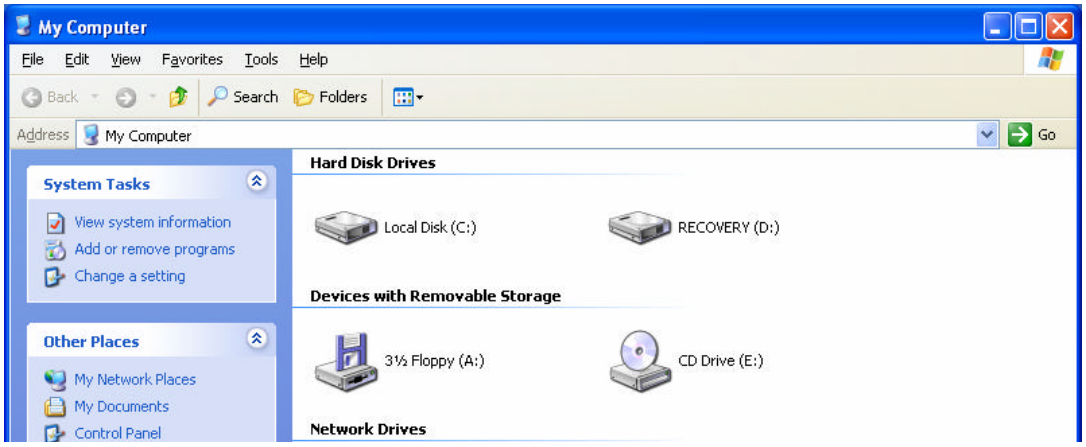
For security reason, it is recommended to change the default settings for the switch before deploying it to your network:

To change IP address	Use Web System Configuration Menu
To change password	Use Web System Configuration Menu

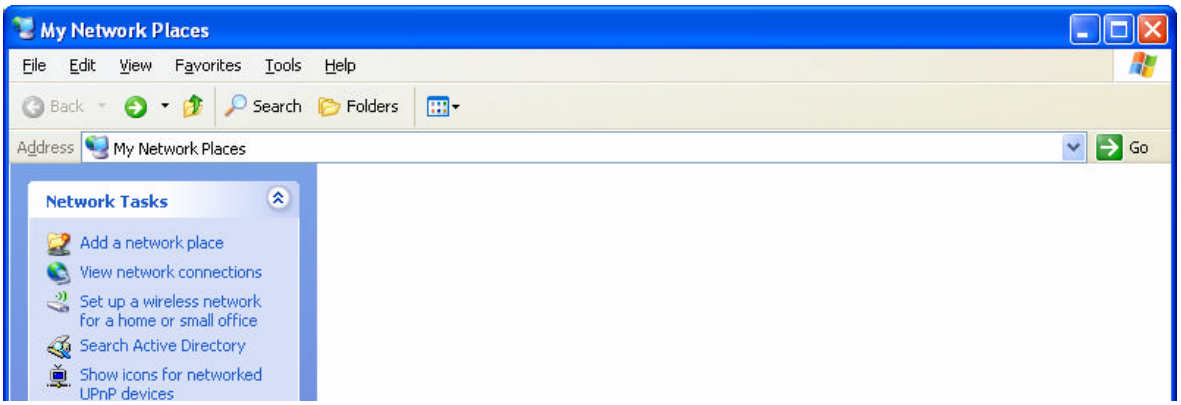
2.10 Initial Switch Access and Configuration

Before the switch can be deployed into your network, you must first access the switch from a local PC. To access the switch from your PC, follow the steps below:
(Note: The steps below are performed on the Windows XP operating system.)

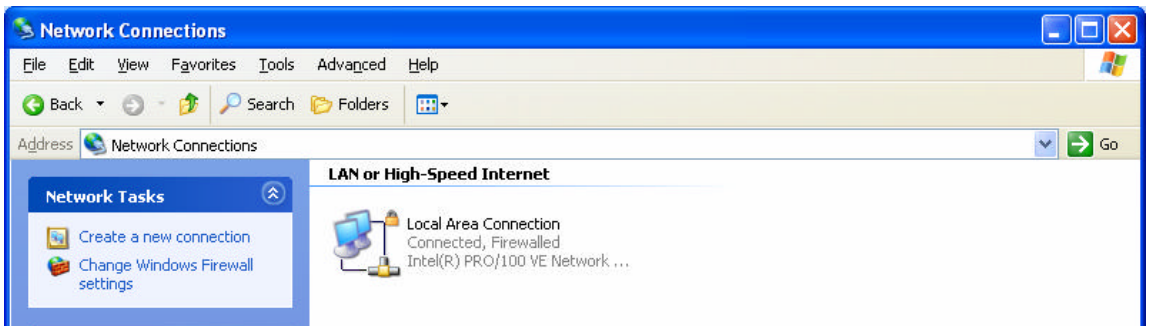
1. Connect the switch to your PC by plugging a Cat5 or higher cable into the network connection of your PC and one of the network connections on the front of the switch. Be sure that the PC and switch are not connected to your local area network.
2. Click on the **My Computer** icon on the desk-top or Start Menu.
3. Click the **My Network Places** link under the Other Places heading.



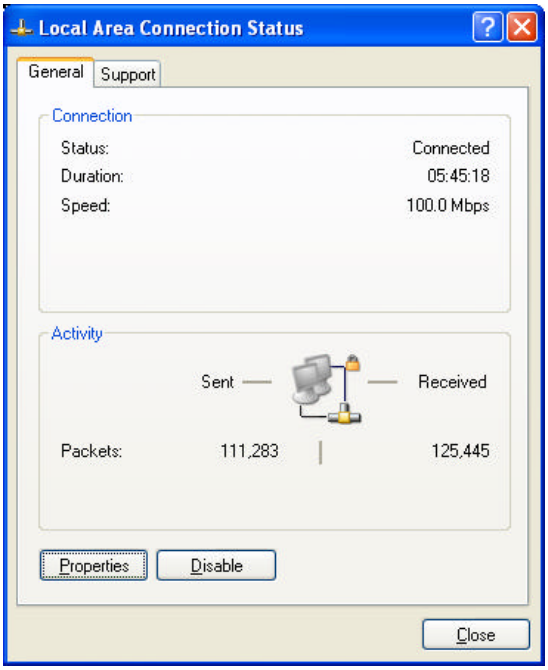
4. Click on the **View Network Connections** link under the Network Tasks heading.


My Network Places
File Edit View Favorites Tools Help
Back Search Folders
Address My Network Places
Go
Network Tasks
Add a network place
View network connections
Set up a wireless network for a home or small office
Search Active Directory
Show icons for networked UPnP devices

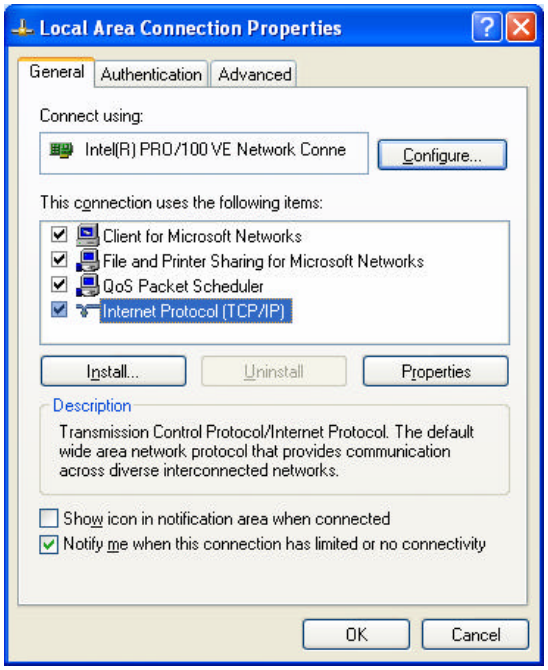
5. Double click on the **Local Area Connections** icon.



6. Click on the **Properties** button in the Local Area Connections Status window.



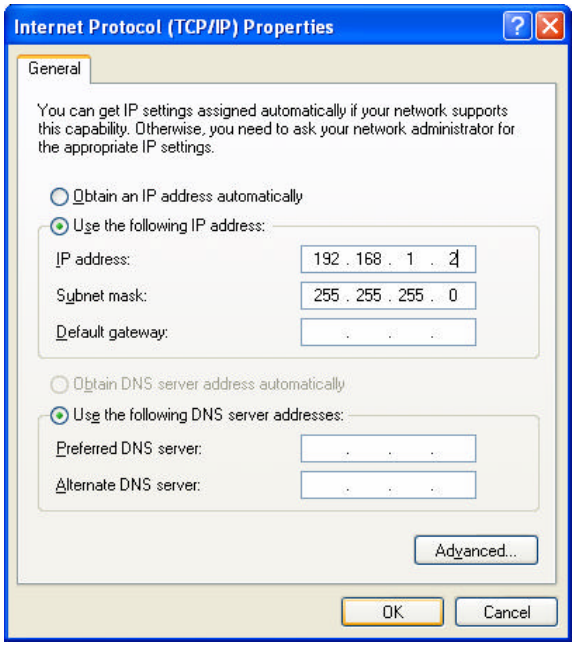
7. Double click on the **Internet Protocol (TCP/IP)** listing on the General tab in the Local Area Connections Properties window.



8. Click on the **Use the following IP address:** Radio button in the Internet Protocol (TCP/IP) Properties window.

   NOTE: If there are values currently listed in any or all of the fields in this window, please be sure to record them as they will be needed to set the computer back to the original status.

9. Once the original values have been recorded, enter **192.168.1.2** into the IP address field, and 255.255.225.0 into the Subnet mask field. The remaining fields should be blank. Click **OK.**


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 1 . 2
Subnet mask: 255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

10. Click **OK** to close any open windows.

Continue to Section 3 – Operation of Web-based Management.

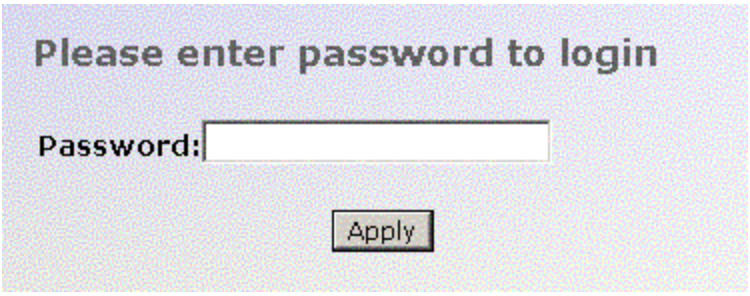
NOTE: Once you have accessed the Web-based Management feature and have changed to the IP address of the switch to one that will be recognized by your network, you must restore the PC to the original Internet Protocol (TCP/IP) settings that were recorded in Step 8.

3. Operation of Web-based Management

The steps to start web management are:

1. Type http://192.168.1.1 in the address row in a browser.

2. Type password in order to login and access authentication. The default password is [admin].



Login

For the first time to use, please enter the default password, then click the <Apply> button.
The login process now is completed.

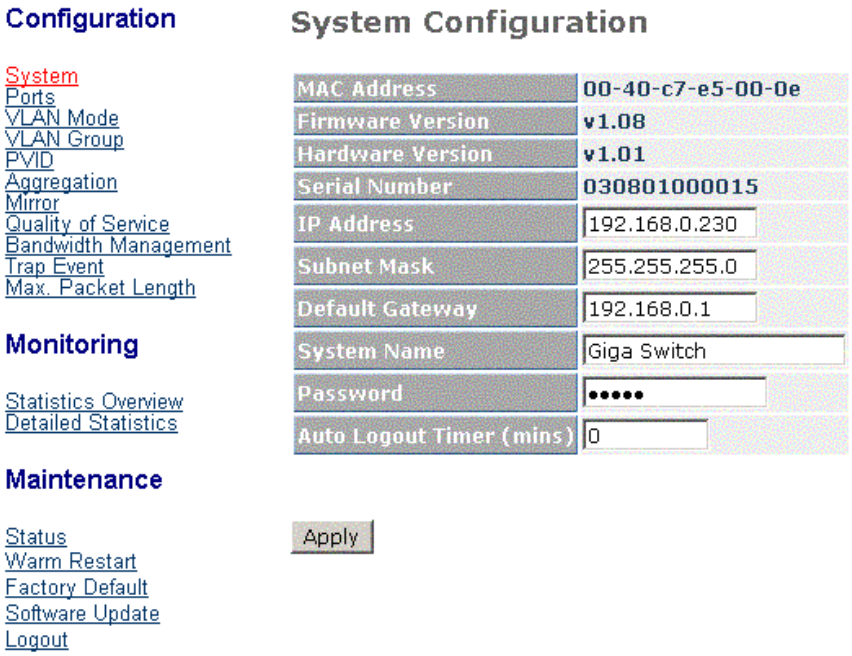
In the switch, it supports a simple user management function allowing only one administrator to configure the system at the same time.

To optimize the display effect, it is recommended to use:

- Microsoft IE 6.0 above, Netscape V7.1 above or FireFox V1.00 above
- Display resolution 1024x768.

3.1 Web Management Home Overview

The Information of Page Layout



Top side

It shows the front panel of the switch. In the front panel, the linked ports will display green; as to the ports, which are link off, they will be dark. For the optional modules, the slot will show only a cover plate if no module exists and will show a module if a module is present. The image of module depends on the one you inserted. The same, if disconnected, the port will show just dark, if linked, green.

Left side

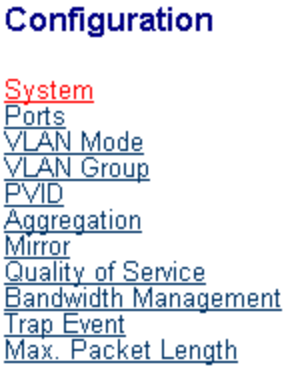
The main menu tree for web is listed in the page. According to the function name in boldface, all functions can be divided into three parts, including Configuration, Monitoring and Maintenance. The functions of each folder are described in its corresponding section respectively. The function names in normal type are the sub-functions. When clicking it, the function is performed.

Right side

This area is used for detailed configuration and status.

The following list is the main function tree for web user interface.

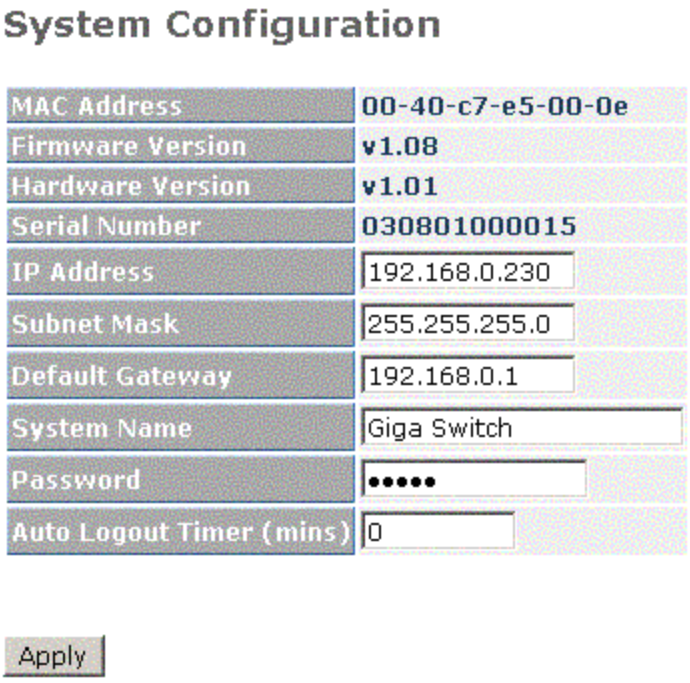
3.2 Configuration



Each of them will be described in detail in the following sections.

3.2.1 System Configuration

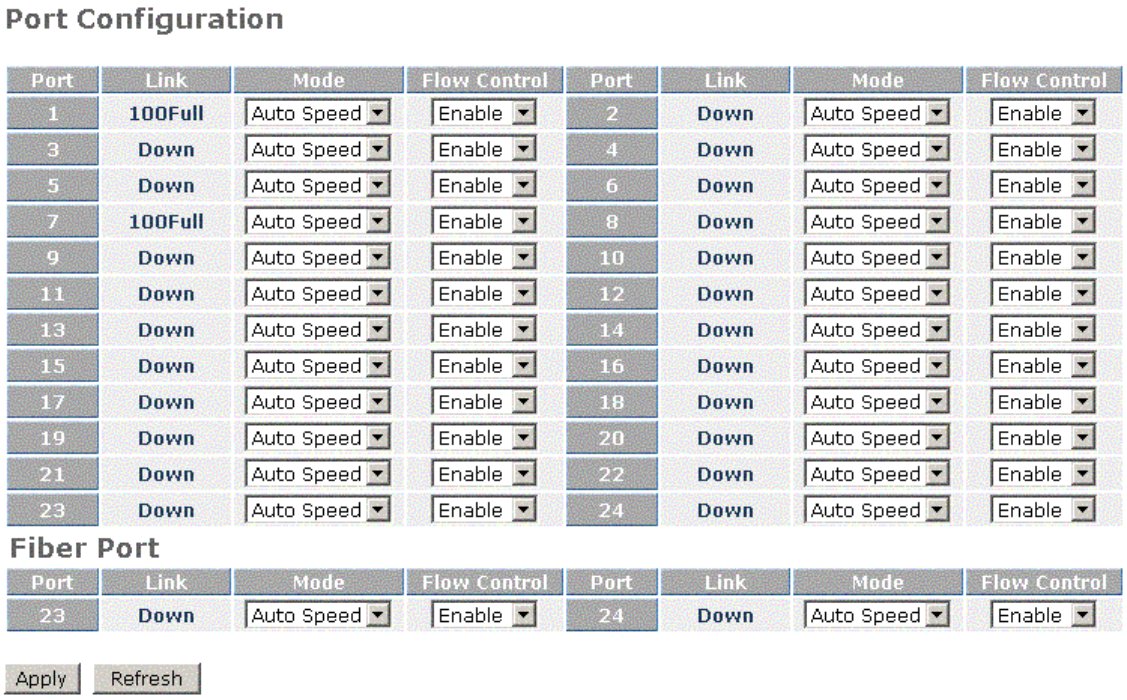
The switch supports manual IP address setting. When the IP address is changed, you must reboot the switch to have the setting taken effect and use the new IP to browse for web management.



Parameter description:

MAC Address	It is the Ethernet MAC address of the management agent in this switch.
Firmware Version	The firmware version of this switch.
Hardware Version	The hardware version of this switch.
Serial Number	The serial number is assigned by the manufacturer.
IP Address	Users can configure the IP settings and fill in new values. Default: 192.168.1.1
Subnet Mask	Subnet mask is used to set the subnet mask value. Default: 255.255.255.0
Default Gateway	Set an IP address for a gateway to handle those packets that do not meet the routing rules predefined in the device. Default: 192.168.1.254
System Name	Set a special name for this switch. Up to 16 characters are allowed in this parameter. Any alphanumeric character and null are acceptable. Default: Giga Switch
Password	Set a password for this switch. Up to 16 characters are allowed in this parameter. Any alphanumeric character is acceptable. Default: admin
Auto Logout Timer	Set the auto-logout timer. The valid value is 0 ~ 60 in the unit of minute and a decimal point is not allowed. The value 0 means auto-logout timer is disabled. Default: 0

3.2.2 Ports Configuration


Port Configuration
Port Link Mode Flow Control Port Link Mode Flow Control
1 100Full Auto Speed Enable 2 Down Auto Speed Enable
3 Down Auto Speed Enable 4 Down Auto Speed Enable
5 Down Auto Speed Enable 6 Down Auto Speed Enable
7 100Full Auto Speed Enable 8 Down Auto Speed Enable
9 Down Auto Speed Enable 10 Down Auto Speed Enable
11 Down Auto Speed Enable 12 Down Auto Speed Enable
13 Down Auto Speed Enable 14 Down Auto Speed Enable
15 Down Auto Speed Enable 16 Down Auto Speed Enable
17 Down Auto Speed Enable 18 Down Auto Speed Enable
19 Down Auto Speed Enable 20 Down Auto Speed Enable
21 Down Auto Speed Enable 22 Down Auto Speed Enable
23 Down Auto Speed Enable 24 Down Auto Speed Enable
Fiber Port
Port Link Mode Flow Control Port Link Mode Flow Control
23 Down Auto Speed Enable 24 Down Auto Speed Enable
Apply
Refresh

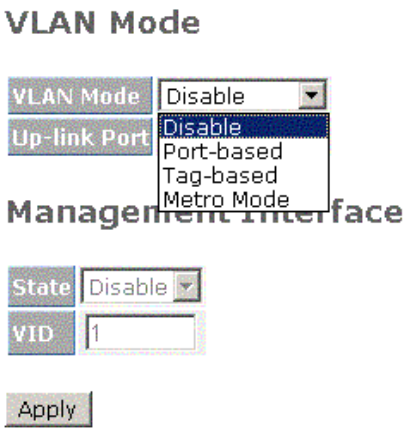
Parameter description:

Mode Set the speed and duplex of the port. Speed/Duplex is comprised of the combination of speed mode, 10/100/1000Mbps, and duplex mode, full duplex and half duplex. In Auto Speed mode, no default value. In Forced mode, default value depends on your setting.

Flow Control There are two modes to choose in flow control, including Enable and Disable. If flow control is set Enable, both parties can send PAUSE frame to the transmitting device(s) if the receiving port is too busy to handle. When it is set Disable, there will be no flow control in the port. It drops the packet if too much to handle. Default: Enable

3.2.3 VLAN Mode Configuration

The switch supports Port-based VLAN and 802.1Q Tag-based VLAN. Support 24 active VLANs and VLAN ID 1~4094.



Parameter description:

VLAN Mode *Disable* - Stop VLAN function on the switch. In this mode, no VLAN is applied to the switch. This is the default setting.

Port-based - Port-based VLAN is defined by port. No filtering criterion applies in port-based VLAN. The only criterion is the physical port you connect to.

Tag-based - Tag-based VLAN identifies its member by VID. This is quite different from port-based VLAN. Each tag-based VLAN you built up must be assigned VLAN name and VLAN ID. Valid VLAN ID is 1-4094.

Metro Mode - The Metro Mode is a quick configuration VLAN environment method on Port-based VLAN. It will create 23 or 24 Port-based VLAN groups.

Up-link Port This function is enabled only when metro mode is chosen in VLAN mode.

23 - Except Port 23, each port of the switch cannot transmit packets with each other. Each port groups a VLAN with Port 23, thus, total 23 groups consisting of 2 members are formed.

24 - Except Port 24, each port of the switch cannot transmit packets with each other. Each port groups a VLAN with Port 24, thus, total 23 groups consisting of 2 members are formed.

23&24 - Except Port 23 and Port 24, each port of the switch cannot transmit packets with each other. Each port groups a VLAN with Port 23 and Port 24, thus, total 22 groups consisting of 3 members are formed.

This switch can support up to maximal 24 port-based VLAN groups or 24 Tag VLAN groups.

Management Interface:

State It works when the tag-based mode is chosen. When this function is enabled, only the tagged packets with this VID can manage the switch.

VID Valid range 1~4094.

3.2.4 VLAN Group Configuration

It shows the existed information of VLAN Groups List and maintains them, i.e. modify and delete one of them. You can easily create and delete a VLAN group by pressing <Add Group> and <Delete Group> function buttons, or click the Group ID directly to edit it.

Parameter description:

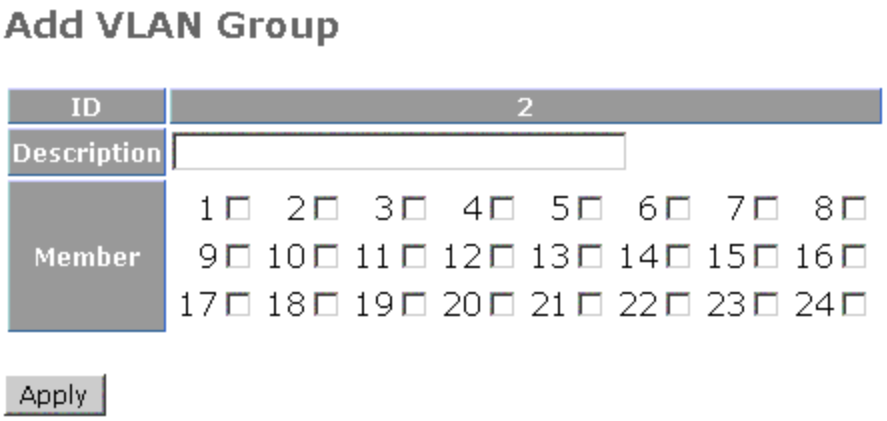
ID (Group ID) When you want to edit a VLAN group, you must select the Group ID field. Then, you will enter Tag-based VLAN Group Setting or Port-based VLAN Group Setting page, which depends on your VLAN mode selection.

Description The description defined by administrator is associated with a VLAN group.

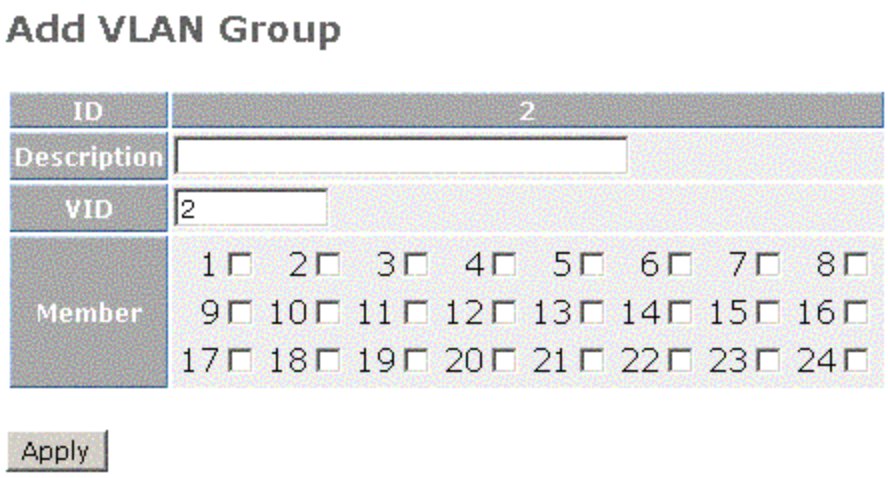
VID VLAN identifier. Each tag-based VLAN group has a unique VID. It appears only in tag-based mode.

Member This is used to enable or disable if a port is a member of the new added VLAN, [Enable] means it is a member of the VLAN. Just tick the check box (t) beside the port x to enable it.

<Add Group> Create a new port-based VLAN or tag-based VLAN, which depends on the VLAN mode you choose in VLAN mode function.

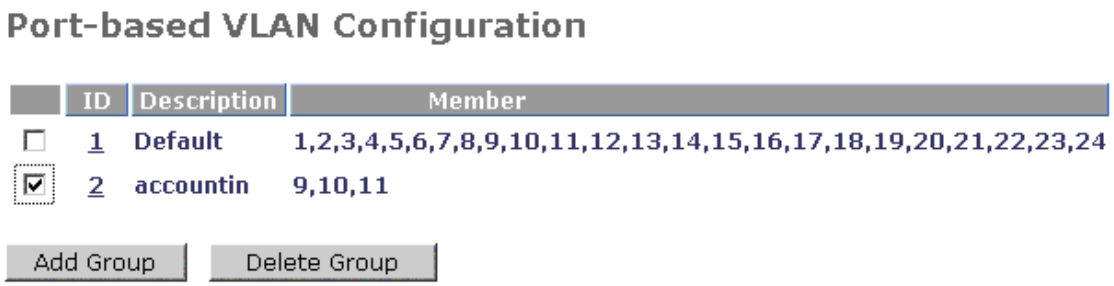


Add a Port-based VLAN group

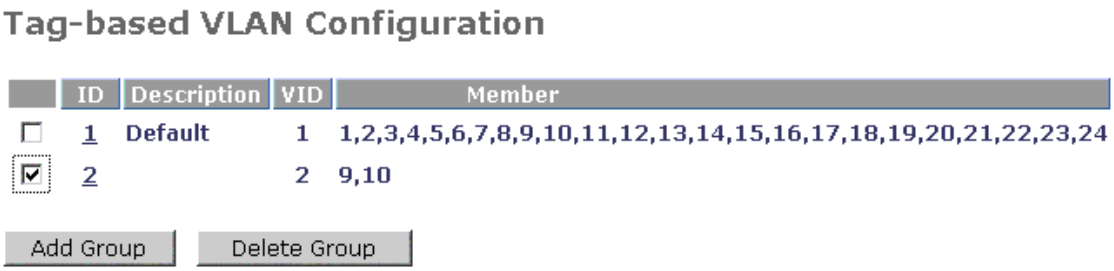


Add a Tag-based VLAN group

<Delete Group> Just tick the check box (t) beside the ID, then press the <Delete Group> button to delete the group.



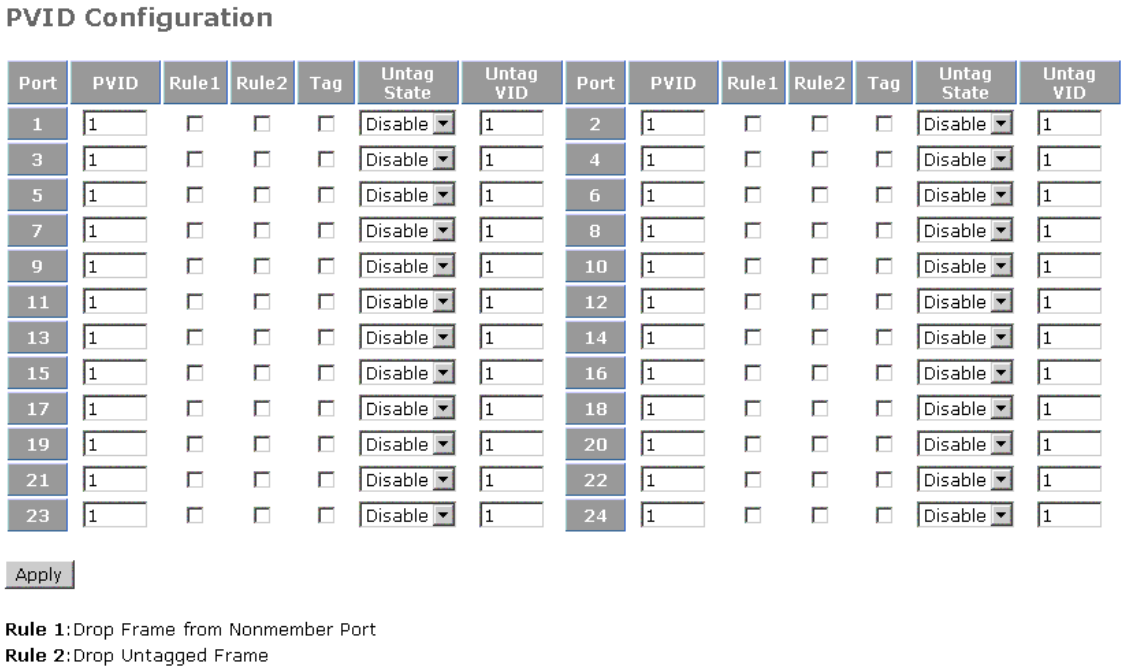
Delete a Port-based VLAN group



Delete a Tag-based VLAN group

3.2.5 PVID Configuration

This configuration is applied to Tag-based VLAN mode only.


PVID Configuration
Port PVID Rule1 Rule2 Tag Untag State Untag VID Port PVID Rule1 Rule2 Tag Untag State Untag VID
1 1 Disable 1 2 1 Disable 1
3 1 Disable 1 4 1 Disable 1
5 1 Disable 1 6 1 Disable 1
7 1 Disable 1 8 1 Disable 1
9 1 Disable 1 10 1 Disable 1
11 1 Disable 1 12 1 Disable 1
13 1 Disable 1 14 1 Disable 1
15 1 Disable 1 16 1 Disable 1
17 1 Disable 1 18 1 Disable 1
19 1 Disable 1 20 1 Disable 1
21 1 Disable 1 22 1 Disable 1
23 1 Disable 1 24 1 Disable 1
Apply
Rule 1:Drop Frame from Nonmember Port
Rule 2:Drop Untagged Frame

Parameter description:

Port 1-24 Port number.

PVID This PVID range will be 1-4094. Before you set a number x as PVID, you have to create a Tag-based VLAN group with VID x.

Rule 1 Forward only packets with VID matching this port configured VID. You can apply Rule 1 as a way to a given port to filter unwanted traffic.

Rule 2 Drop untagged frame. You can configure a given port to accept all frames (Tagged and Untagged) or just receive tagged frame.

Note: If Rule 1 is enabled and port 1, for example, receives an untagged packet, the switch will apply the PVID of port 1 to tag this packet, the packet then will be forwarded. But if the PVID of port 1 is not 100, the packet will be dropped.

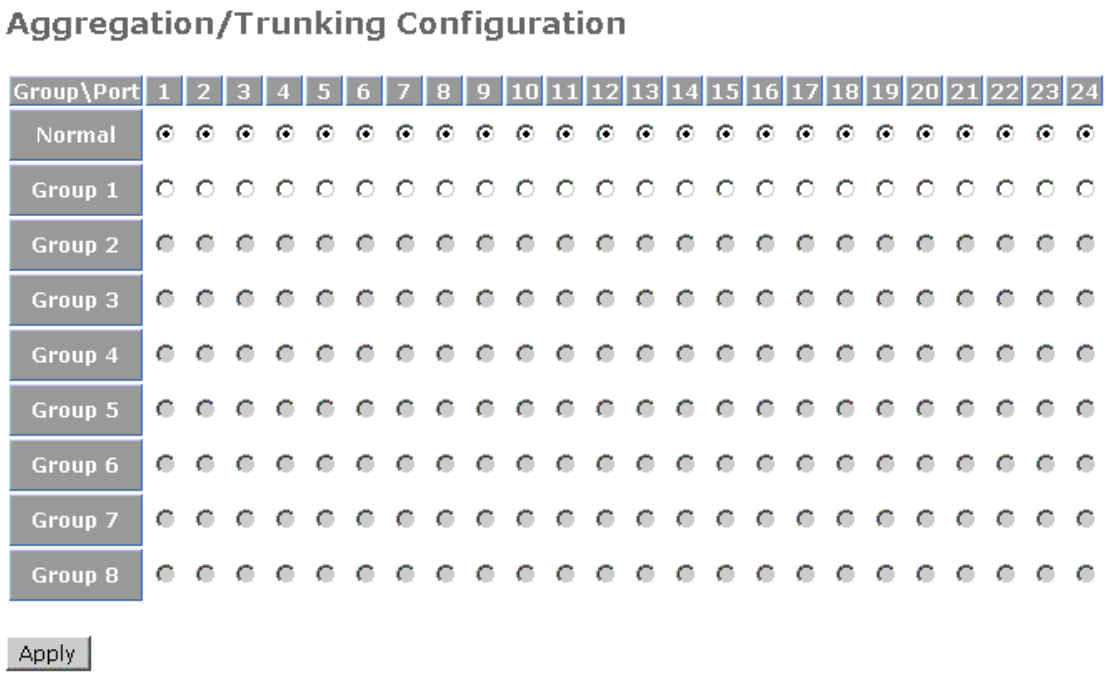
Tag This is an egress rule of the port. Here you can choose untag or tag. Tag means the outgoing packets must carry VLAN tag header, just click the check box. Untag means the outgoing packets carry no VLAN tag header.

Untag State If you checked this function for a Tag out port, the packet form this port may be tag out. But, the packet would be untag out if the VID of its tag is the same as the value of Untag VID while Untag VID state is Enable.

Untag VID Valid range is 0~4094.

3.2.6 Aggregation Configuration

The Aggregation (Port Trunking) Configuration is used to configure the settings of Link Aggregation. You can bundle more than one port with the same speed, full duplex and the same MAC to be a single logical port, thus the logical port aggregates the bandwidth of these ports.



Parameter description:

Normal Set up the ports that do not join any aggregation trunking group.

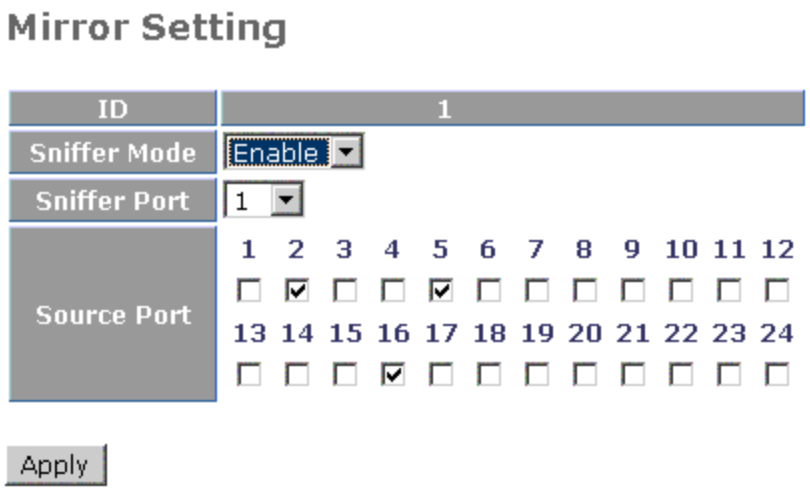
Group 1~8 Group the ports you choose together. Up to 12 ports can be selected for each group.

Note:

Check the following to avoid errors in configuration - When configuring the link aggregation function, you should check that whether the aggregated ports are in full-duplex mode as well as their speed is the same or not. The aggregated ports are in the same VLAN group.

3.2.7 Mirror Configuration

Mirror Configuration is to monitor the traffic of the network. For example, we assume that Port A and Port B are Sniffer Port and Source Port respectively, thus, the traffic passed by Port B will be copied to Port A for monitoring.



Parameter description:

Sniffer Mode Used for the activation or deactivation of Port Mirror function, the switch port mirror supported Ingress traffic only. Default is disable.

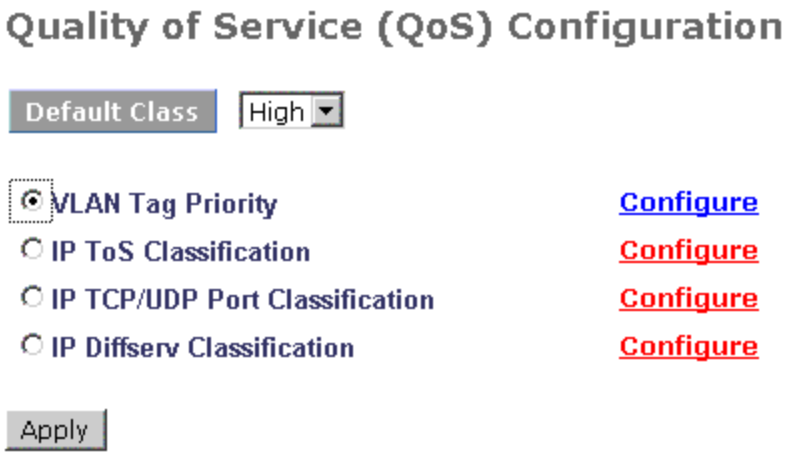
Sniffer Port Set up the port for monitoring. Valid port is Port 1~24 and default is Port 1.

Source Port Set up the ports for being monitored. Just tick the check box (t) under the port x and valid port is Port 1~24.

Note:

When configuring the mirror function, you should avoid setting a port to be a sniffer port and aggregated port at the same time. It will cause something wrong.

3.2.8 Quality of Service Configuration

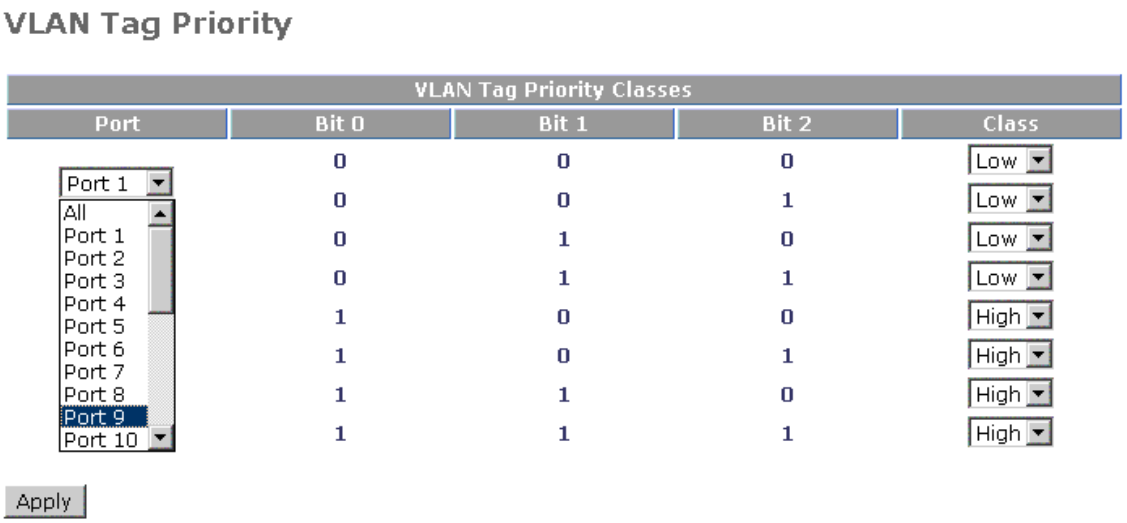


Function description:

Default Class	Some packets which did not belong to the selected QoS classification method would be classified as Default Class.
[VLAN Tag Priority]	In VLAN-tagged packet, there are 3 bits belonging to priority. According to these 3 bits, we could arrange 8 traffics -0 0 0, 0 0 1, 0 1 0, 0 1 0, 1 0 0, 1 0 1, 1 1 0, 1 1 1. We can set High priority or Low priority for each traffic class.
[IP ToS Classification]	In a received IP packet, TOS field is used to classify the priority class to which the packet belongs.
[IP TCP/UDP Port Classification]	In a received TCP or UDP packet, the software Port number associated with the packet is checked and classified for the priority class. Eight Port numbers can be configured. This option also supports simple L4 configuration for some popular applications.
[IP Deffserv Classification]	In a received IP packet, DiffServ field is used to classify the priority class to which the packet belongs.

Click one of the QoS classification methods for the switch and click <Apply> to confirm the selection. Then, click [Configure] for further detailed configuration for the selected classification method.

3.2.8.1 VLAN Tag Configuration



Parameter description:

Port *Port 1 ~ Port 24* - User can set up the port (1~24) respectively to let VLAN Tag QoS function work on them. Multiple port selection is allowed.

All - select all ports (1~24) to simplify the procedure of configuration.

Class Each priority tag value is configured with a priority class.

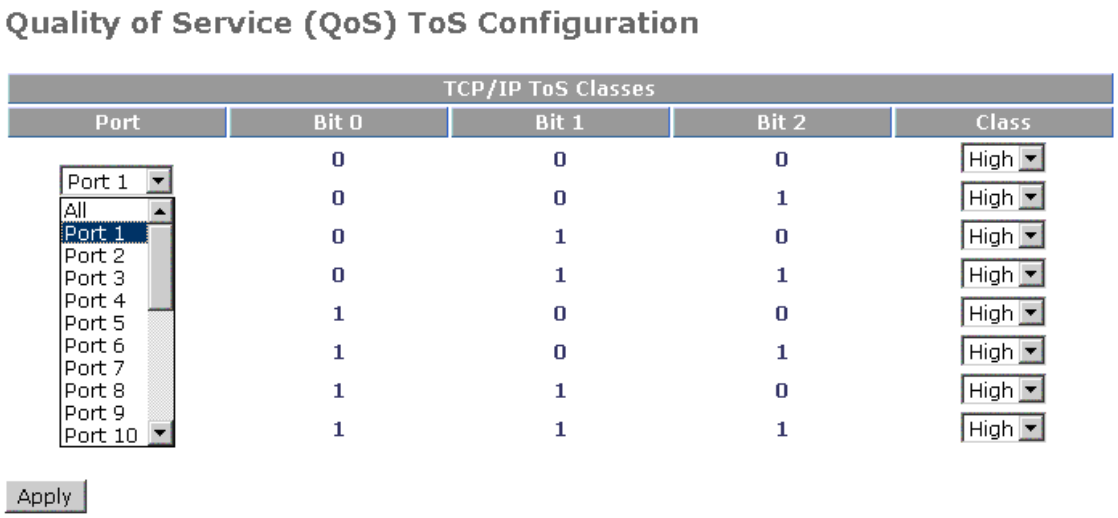
High - High Priority

Low - Low priority

Note:

1. Bit 0 Bit 1 Bit 2 represent the 3-bit value in priority tag field.
2. Each port can be configured its own tag values and priority class mapping.
3. Untagged packets are classified with Default Class.

3.2.8.2 IP ToS Classification



Parameter description:

Port *Port 1 ~ Port 24* - User can set up the port (1~24) respectively to let IP ToS QoS Classification function work on them. Multiple port selection is allowed.

All - select all ports (1~24) to simplify the procedure of configuration.

Class Each ToS value is configured with a priority class.

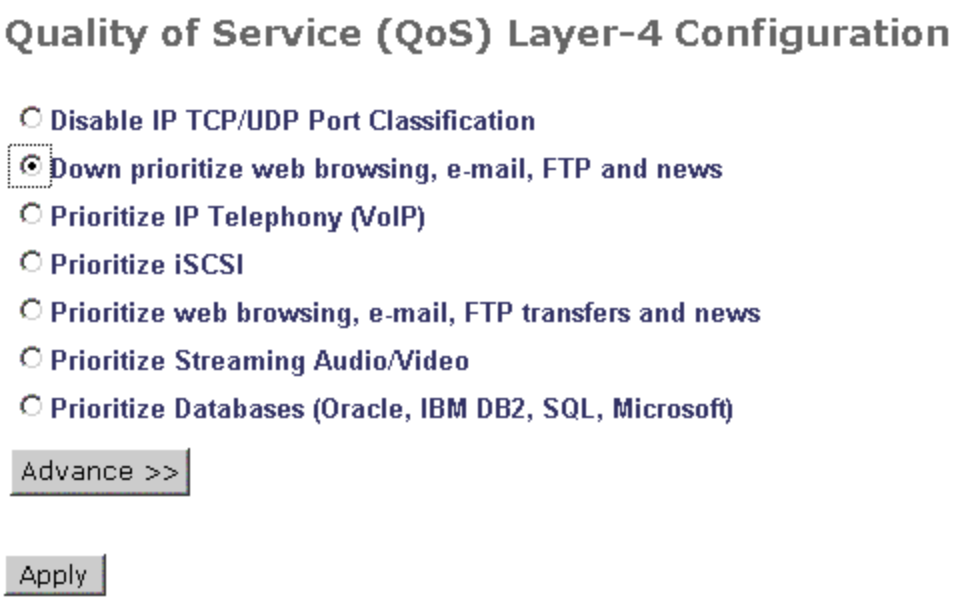
High - High Priority

Low - Low priority

Note:

Bit 0, Bit 1, Bit 2 represent Bit 5 ~ Bit 7 in TOS Field of IP Header in an IP packet.

3.2.8.3 IP TCP/UDP Port Classification


Quality of Service (QoS) Layer-4 Configuration
Disable IP TCP/UDP Port Classification
Down prioritize web browsing, e-mail, FTP and news
Prioritize IP Telephony (VoIP)
Prioritize iSCSI
Prioritize web browsing, e-mail, FTP transfers and news
Prioritize Streaming Audio/Video
Prioritize Databases (Oracle, IBM DB2, SQL, Microsoft)
Advance >>
Apply

In L4 QoS Configuration, you can select one of these special network transmission events with the associated predefined configuration. Or, click <Advanced> to view the detailed configuration and make change for customizing. The L4 event options are:

- Disable IP TCP/UDP Port Classification
- Down prioritize web browsing, e-mail, FTP and news
- Prioritize IP Telephony (VoIP)
- Prioritize iSCSI
- Prioritize web browsing, e-mail, FTP transfers and news
- Prioritize Streaming Audio/Video
- Prioritize Databases (Oracle, IBM DB2, SQL, Microsoft)

Click one of the options.

<**Advance**>>> Click Advanced mode to view and modify detailed port number configuration.

<**Simple**<<> Click to disable display of the detailed port number configuration.

Advanced Mode:

Special TCP/UDP class:

Class assigned to the configured Custom Port numbers

High - High Priority

Low - Low priority

Default class (all other TCP/UDP ports):

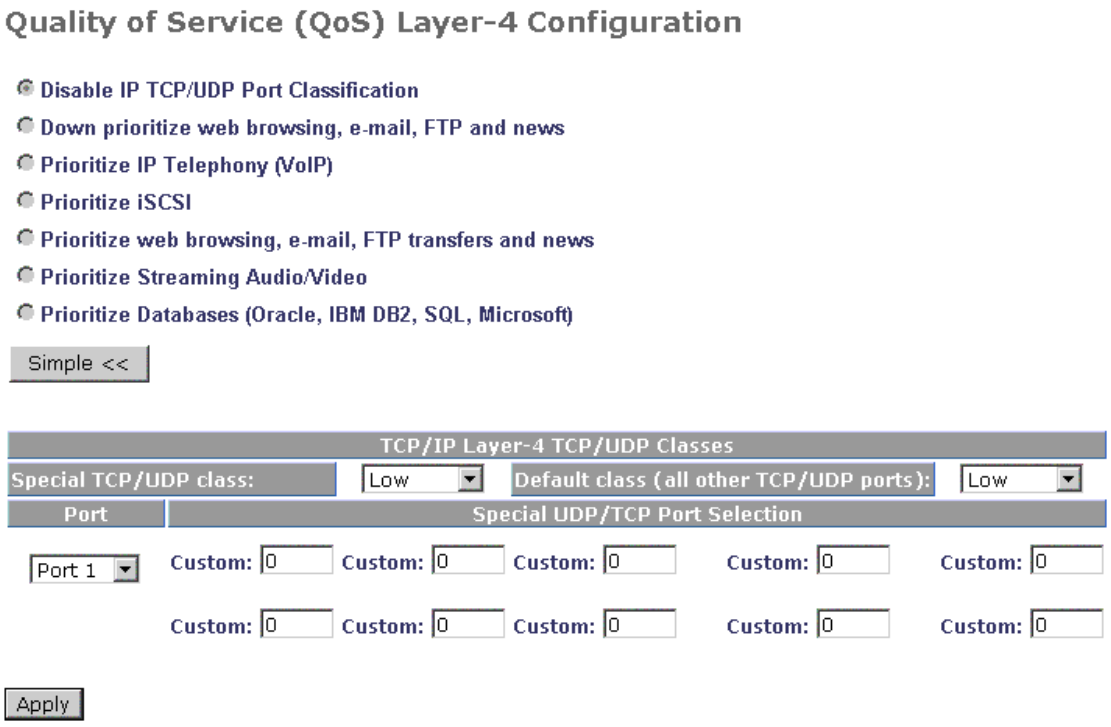
The class assigned to the port numbers that are not in the Custom port list.

Port *Port 1 ~ Port 24* - User can set up the port (1~24) respectively to let L4 QoS Classification function work on them. Multiple port selection is allowed.

All - select all ports (1~24) to simplify the procedure of configuration.

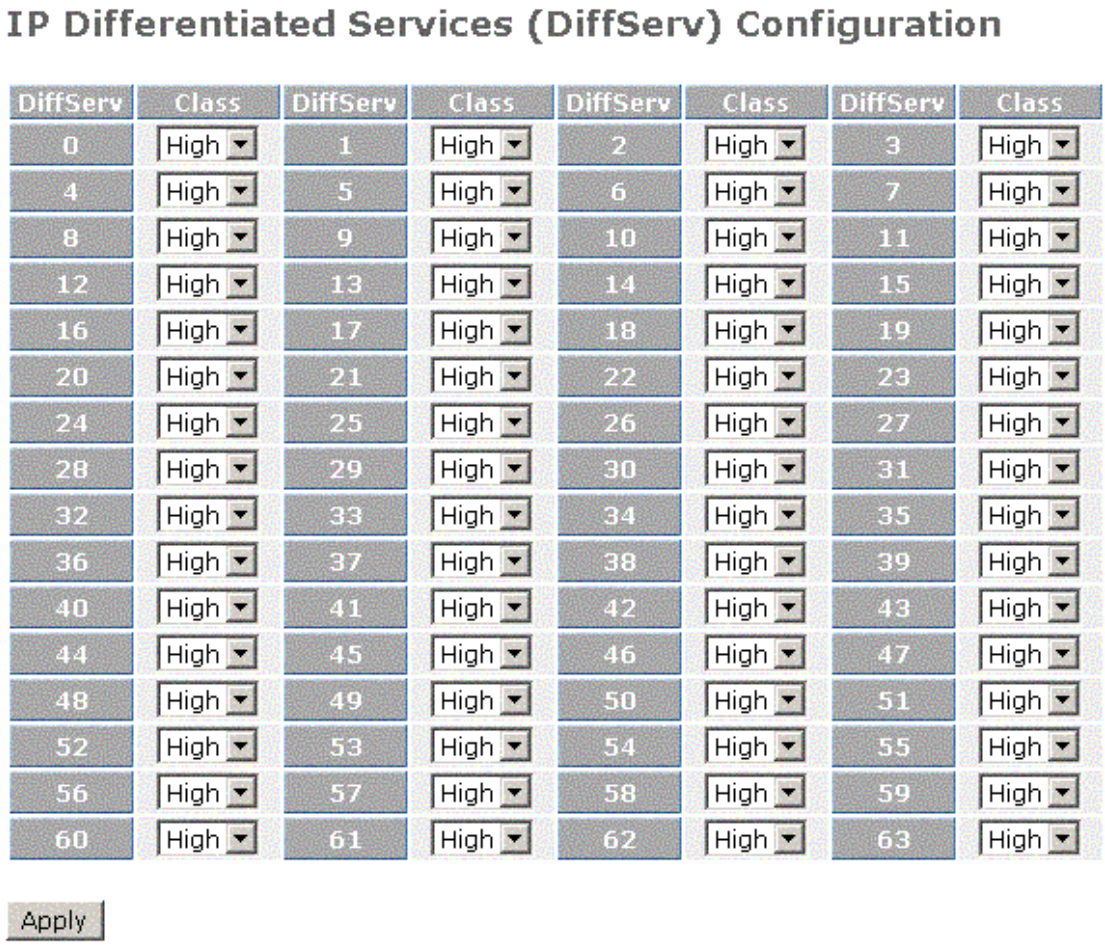
Custom: TCP/UDP port number (Up to 10 custom port numbers can be configured.)

The following figure illustrates the predefined configuration when selecting option of [Down prioritize web browsing, e-mail, FTP and news] and the port numbers are 80,280,443,25,110,20,21,69,119,2009.



3.2.8.4 IP DiffServ Classification

IP Diffserve Classification method uses 6-bit field of DSCP in an IP packet to classify the priority class of the received IP packet. Each DSCP (DiffServ value) can be configured a priority class.


IP Differentiated Services (DiffServ) Configuration
DiffServ Class DiffServ Class DiffServ Class DiffServ Class
0 High 1 High 2 High 3 High
4 High 5 High 6 High 7 High
8 High 9 High 10 High 11 High
12 High 13 High 14 High 15 High
16 High 17 High 18 High 19 High
20 High 21 High 22 High 23 High
24 High 25 High 26 High 27 High
28 High 29 High 30 High 31 High
32 High 33 High 34 High 35 High
36 High 37 High 38 High 39 High
40 High 41 High 42 High 43 High
44 High 45 High 46 High 47 High
48 High 49 High 50 High 51 High
52 High 53 High 54 High 55 High
56 High 57 High 58 High 59 High
60 High 61 High 62 High 63 High
Apply

Parameter description:

DiffServ: Display 64 (0~63) DSCP items.

Class: Class assigned to the DSCP

High - High Priority

Low - Low priority

Note:

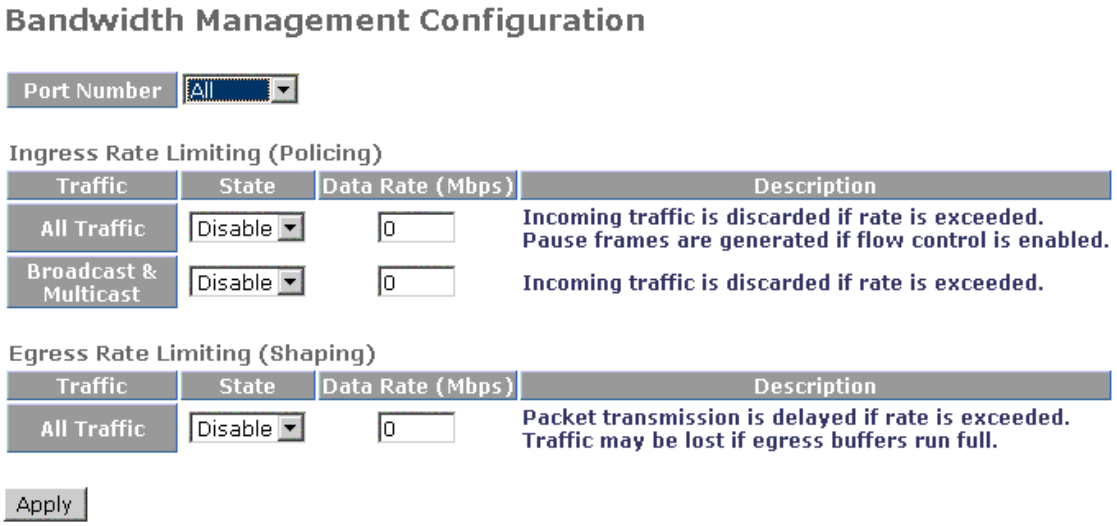
The classification function are applied to all ports and can not be configured for each port respectively..

3.2.9 Bandwidth Management

Bandwidth Management function is used to set up the limit of Ingress and Egress bandwidth for each port.

Note:

Each port of the switch owns 16KB packet buffer. The packet buffer size will be reduced when the bandwidth rate limitation is enabled, which may cause that jumbo frame cannot be forwarded. Avoid enabling jumbo frame and bandwidth rating functions at the same time.



Ingress Rate Limiting parameter description:

Port Number: Choose the port that you would like this function to work on it. Valid range of the port is 1~24. Multiple port selection is allowed. [All] means all ports (Port 1 ~ 24).

All Traffic: Set up the limit of Ingress bandwidth for the selected ports. Incoming traffic will be discarded if the rate exceeds the value you set up in Data Rate field. Pause frames are also generated if flow control is enabled. The format of the packet limits to Unicast, broadcast and multicast.

Data Rate (Mbps): Valid range is 0~1000.

Broadcast & Multicasat: Set up the limit of Ingress bandwidth for the port you choose. Incoming traffic will be discarded if the rate exceeds the value you set up in Data Rate field. The format of the packet only limits to broadcast and multicast.

Data Rate (Mbps): Valid range is 0~1000.

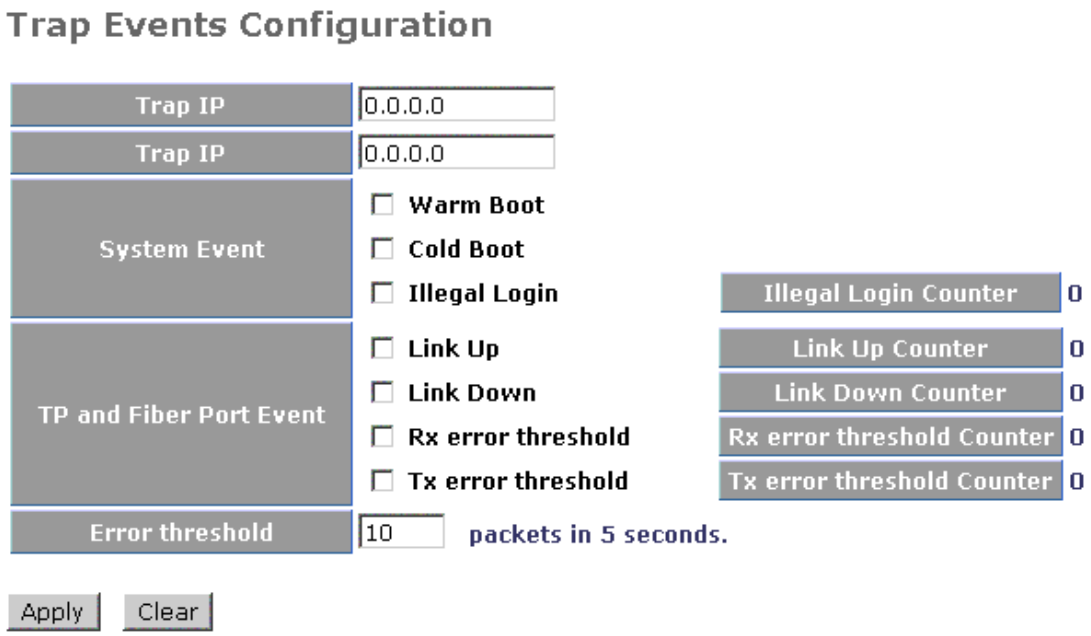
Egress Rate Limiting parameter description:

All Traffic: Set up the limit of Egress bandwidth for the port you choose. Packet transmission will be delayed if the rate exceeds the value you set up in Data Rate field. Traffic may be lost if egress buffers run full. The format of the packet limits to Unicast, broadcast and multicast.

Data Rate (Mbps): Valid range is 0~1000.

3.2.10 Trap Event Configuration

The Trap Events Configuration function is used to enable the switch to send out the SNMP trap information while predefined trap events occurred.



Parameter description:

Trap IP: IP address of the SNMP trap manager who can receive the traps. Two trap managers are supported.

System Events:

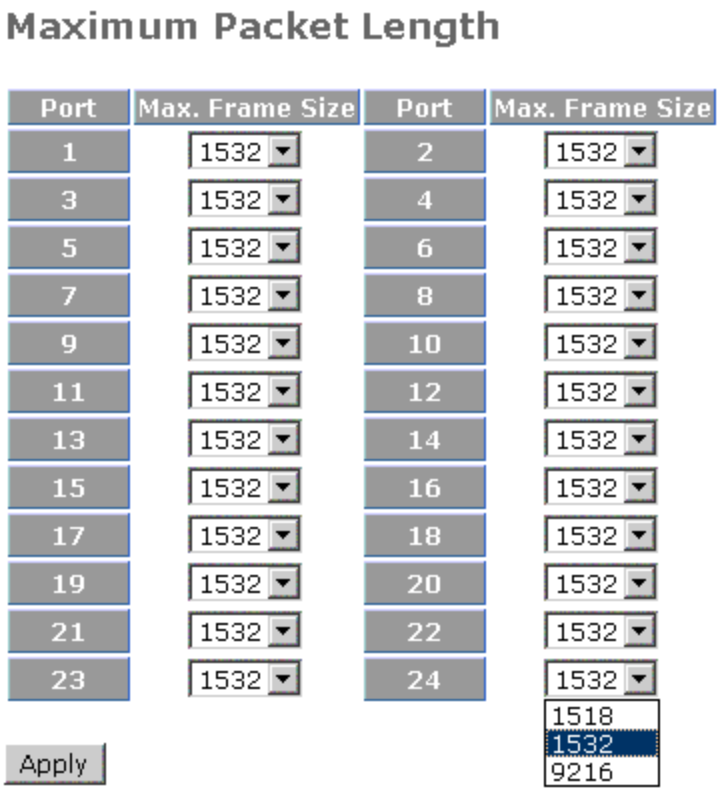
Warm Boot	Warm Start Management operation event
Cold Boot	Power on event of the switch
Illegal Login	Invalid login event

Port Events:

Link Up	Port link up event
Link Down	Port link down event
Rx error threshold	Rx error over threshold event
Tx error threshold	Tx error over threshold event
Error threshold	The number of error packets in 5 seconds

This page also displays occurrence counters of some events.

3.2.11 Max. Packet Length



This function is used to limit the maximum packet length accepted by each port.

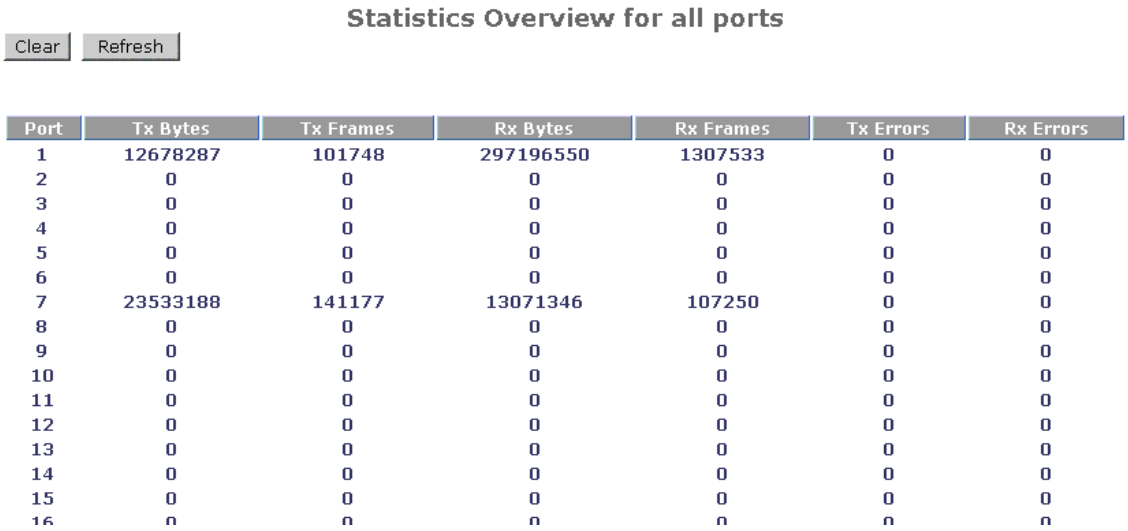
Jumbo Frame(bytes) Set up the maximum length of the packet that each port can accept.
Options: 1518, 1532, 9216 bytes
The default is 1532 bytes.

3.3 Monitoring

There are two functions contained in the monitoring section.

3.3.1 Statistics Overview

The function of Statistics Overview collects any information and provides the counting summary about the traffic of the port, no matter the packet is good or bad.



Port	Tx Bytes	Tx Frames	Rx Bytes	Rx Frames	Tx Errors	Rx Errors
1	12678287	101748	297196550	1307533	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0
7	23533188	141177	13071346	107250	0	0
8	0	0	0	0	0	0
9	0	0	0	0	0	0
10	0	0	0	0	0	0
11	0	0	0	0	0	0
12	0	0	0	0	0	0
13	0	0	0	0	0	0
14	0	0	0	0	0	0
15	0	0	0	0	0	0
16	0	0	0	0	0	0

If the counting is overflow, the counter will be reset and restart counting.

Parameters description:

Tx Bytes Total transmitted bytes.

Tx Frames The counting number of the packet transmitted.

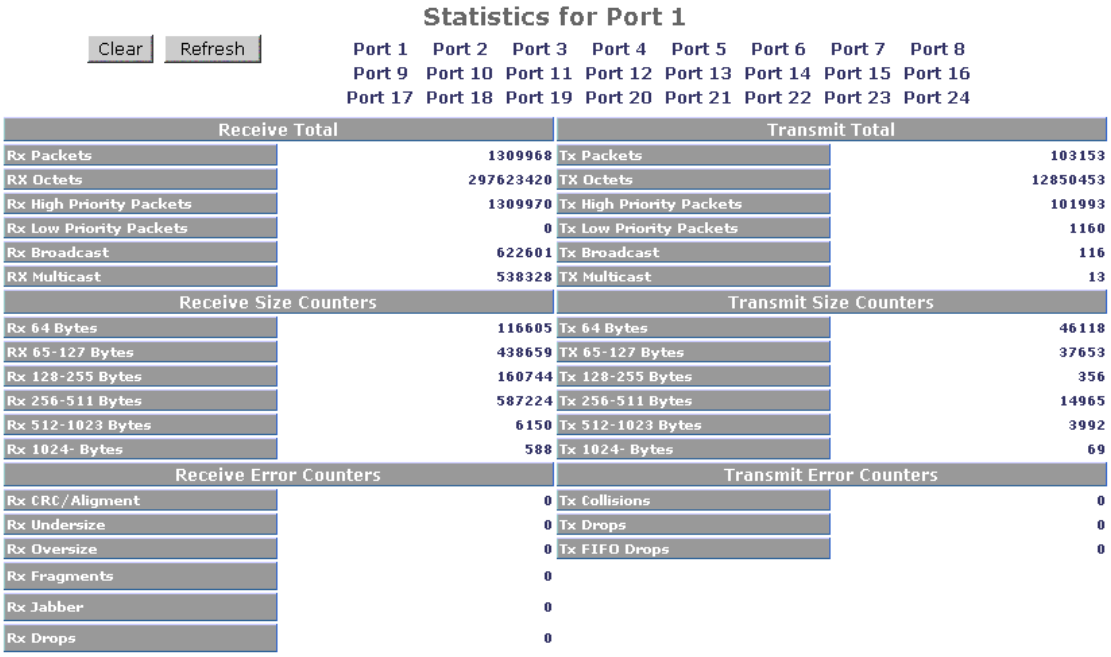
Rx Bytes Total received bytes.

Rx Frames The counting number of the packet received.

Tx Errors Number of bad packets transmitted.

Rx Errors Number of bad packets received.

3.3.2 Detailed Statistics


Statistics for Port 1
Clear
Refresh
Port 1 Port 2 Port 3 Port 4 Port 5 Port 6 Port 7 Port 8
Port 9 Port 10 Port 11 Port 12 Port 13 Port 14 Port 15 Port 16
Port 17 Port 18 Port 19 Port 20 Port 21 Port 22 Port 23 Port 24
Receive Total
Rx Packets 1309968
RX Octets 297623420
Rx High Priority Packets 1309970
Rx Low Priority Packets 0
Rx Broadcast 622601
RX Multicast 538328
Transmit Total
Tx Packets 103153
TX Octets 12850453
Tx High Priority Packets 101993
Tx Low Priority Packets 1160
Tx Broadcast 116
TX Multicast 13
Receive Size Counters
Rx 64 Bytes 116605
RX 65-127 Bytes 438659
Rx 128-255 Bytes 160744
Rx 256-511 Bytes 587224
Rx 512-1023 Bytes 6150
Rx 1024- Bytes 588
Transmit Size Counters
Tx 64 Bytes 46118
TX 65-127 Bytes 37653
Tx 128-255 Bytes 356
Tx 256-511 Bytes 14965
Tx 512-1023 Bytes 3992
Tx 1024- Bytes 69
Receive Error Counters
Rx CRC/Aligment 0
Rx Undersize 0
Rx Oversize 0
Rx Fragments 0
Rx Jabber 0
Rx Drops 0
Transmit Error Counters
Tx Collisions 0
Tx Drops 0
Tx FIFO Drops 0

Parameter description:

Rx Packets The counting number of the packet received.

RX Octets Total received bytes.

Rx High Priority Packets Number of Rx packets classified as high priority.

Rx Low Priority Packets Number of Rx packets classified as low priority.

Rx Broadcast Show the counting number of the received broadcast packet.

Rx Multicast Show the counting number of the received multicast packet.

Tx Packets The counting number of the packet transmitted.

TX Octets Total transmitted bytes.

Tx High Priority Packets Number of Tx packets classified as high priority.

Tx Low Priority Packets Number of Tx packets classified as low priority.

Tx Broadcast Show the counting number of the transmitted broadcast packet.

Tx Multicast Show the counting number of the transmitted multicast packet.

Rx 64 Bytes Number of 64-byte frames in all packets received.

Rx 65-127 Bytes	Number of 65 ~ 126-byte frames in all packets received.
Rx 128-255 Bytes	Number of 127 ~ 255-byte frames in all packets received.
Rx 256-511 Bytes	Number of 256 ~ 511-byte frames in all packets received.
Rx 512-1023 Bytes	Number of 512 ~ 1023-byte frames in all packets received.
Rx 1024-Bytes	Number of 1024-max_length-byte frames in all packets received.
Tx 64 Bytes	Number of 64-byte frames in all packets transmitted.
Tx 65-127 Bytes	Number of 65 ~ 126-byte frames in all packets transmitted.
Tx 128-255 Bytes	Number of 127 ~ 255-byte frames in all packets transmitted.
Tx 256-511 Bytes	Number of 256 ~ 511-byte frames in all packets transmitted.
Tx 512-1023 Bytes	Number of 512 ~ 1023-byte frames in all packets transmitted.
Tx 1024-Bytes	Number of 1024-max_length-byte frames in all packets transmitted.
Rx CRC/Alignment	Number of Alignment errors and CRC error packets received.
Rx Undersize	Number of short frames (<64 Bytes) with valid CRC.
Rx Oversize	Number of long frames(according to max_length register) with valid CRC.
Rx Fragments	Number of short frames (< 64 bytes) with invalid CRC.
Rx Jabber	Number of long frames with invalid CRC.
Rx Drops	Frames dropped due to the lack of receiving buffer.
Tx Collisions	Number of collisions transmitting frames experienced.
Tx Drops	Number of frames dropped due to excessive collision, late collision, or frame aging.
Tx FIFO Drops	Number of frames dropped due to the lack of transmitting buffer.

3.4 Maintenance

The functions are supported:

Status	Display all configuration and status of the switch
Warm Start	Perform a reboot for the switch
Factory Default	Restore all settings back to factory default values
Software Update	Perform an update to the management firmware of the switch
Logout	Perform a logout from the switch

3.4.1 Status

The status including System Status, TP Port Status, Fiber Port Status, Aggregation, VLAN, Mirror, Trap Event and Maximum Packet Length are contained in this function folder for port monitor and management.

System Status

Product Name	24-Port 10/100/1000M Gigabit SW.
Firmware Version	v1.08
Hardware Version	v1.01
Serial Number	030801000015
IP Address	192.168.0.230
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
MAC Address	00-40-c7-e5-00-0e
System Name	Giga Switch
Auto Logout Timer (mins)	0

TP Port Status

Port	Link Status	Speed	Flow Control	Port	Link Status	Speed	Flow Control
1	100Full	Auto	Enabled	2	Down	Auto	Disabled
3	Down	Auto	Disabled	4	Down	Auto	Disabled
5	Down	Auto	Disabled	6	Down	Auto	Disabled
7	100Full	Auto	Enabled	8	Down	Auto	Disabled
9	Down	Auto	Disabled	10	Down	Auto	Disabled
11	Down	Auto	Disabled	12	Down	Auto	Disabled
13	Down	Auto	Disabled	14	Down	Auto	Disabled
15	Down	Auto	Disabled	16	Down	Auto	Disabled

Each of them will be described in detail orderly in the following sections.

System Status

Product Name:	To show the product name of this device.
Firmware Version:	To show the firmware version of this switch.
Hardware Version:	To show the hardware version of this switch.
Serial Number:	The serial number is assigned by the manufacturer.
IP Address:	To show the IP address of this switch.
Subnet Mask:	To show the subnet mask of this switch.
Default Gateway:	To show the default gateway of this switch.
MAC Address:	To show the Ethernet MAC address of this switch.
System Name:	To show the special name for this switch.
Auto Logout Timer:	To show the setting of auto-logout timer in the web UI.

Ports Status

Port:	Display the port number. The number is 1 - 24. Both port 23 and 24 are optional modules.
Link Status:	Link Status will show the current active link speed and duplex. Otherwise, it shows [Down].
Speed:	Display Auto or Forced the speed mode.
Flow Control:	Show each port flow control status.

Aggregation

Normal:	Display the ports that do not join any aggregation trunking group.
Group 1~8:	Display the members of the Group.

VLAN

VLAN Mode:	Display Port-based, Tag-based and metro mode, which depends on the setting in VLAN mode configuration function.
ID:	Display the Group ID.
Description:	Display the description defined by administrator is associated with a VLAN group.
VID:	Display VLAN identifier. Each tag-based VLAN group has a unique VID. It appears only in tag-based mode.
Member:	Display the port members belonging to each VLAN Group.

Management Interface

State	VLAN Tagging status of the switch management interface
VID	VID used by the switch management interface

Mirror

Sniffer Mode:	Display the status the activation or deactivation of Port Mirror function.
Sniffer Port:	Display the port for monitoring.
Source Port:	Display the port for being monitored.

Trap Event

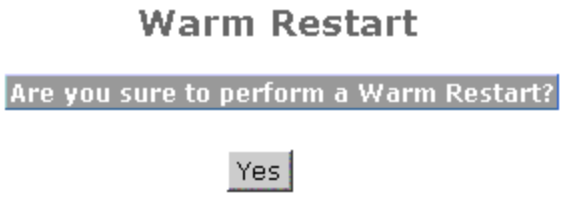
Trap IP	The IP address of the first Trap manager
Trap IP	The IP address of the second Trap manager
Warm Boot	Trap event enable setting
Cold Boot	Trap event enable setting
Illegal Login	Trap event enable setting and counter
Link Up	Trap event enable setting and counter
Link Down	Trap event enable setting and counter
Rx error threshold	Trap event enable setting and counter
Tx error threshold	Trap event enable setting and counter
Error threshold	Setting

Maximum Packet Length

Jumbo Frame(bytes):	Display the settings about the maximum length of the packet that each port of the switch can accept.
<Refresh>	Button to refresh all status

3.4.2 Warm Restart

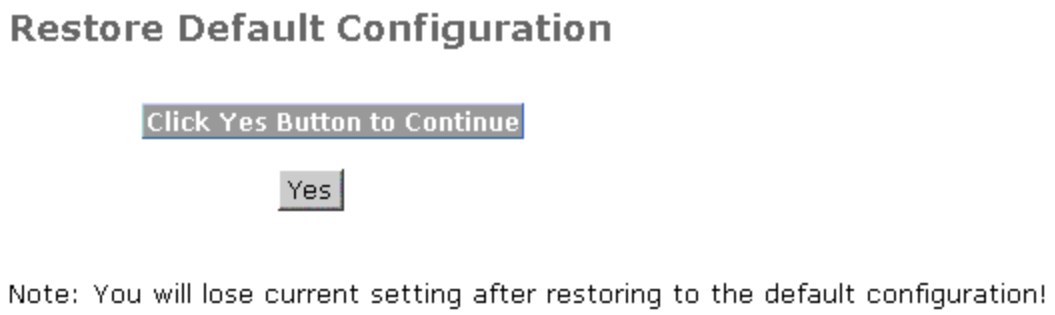
Warm Start function allows to reboot the switch with the current settings and configuration. After upgrading software, then you must reboot to have the new configuration taken effect.



Press <Yes> button to confirm warm restart function, and it will take around thirty (30) seconds to complete the system boot.

3.4.3 Factory Default

Factory Default function can restore settings back to factory default values except the IP address settings.

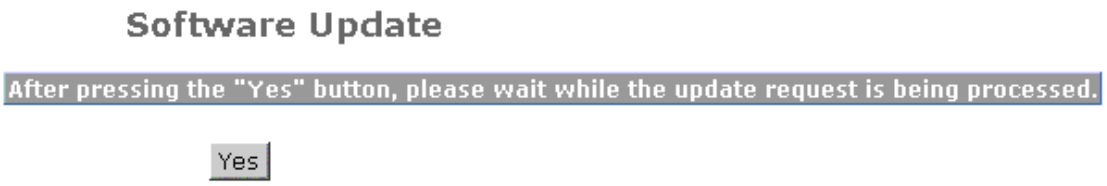

Restore Default Configuration
Click Yes Button to Continue
Yes
Note: You will lose current setting after restoring to the default configuration!

Note:

Function	Current IP Address settings	Other settings
Factory Default web command	No change	Factory default values
Push RESET button less 3 seconds	No change	No change
Push RESET button for 3 seconds	Factory default values	Factory default values

3.4.4 Software Update

The switch supports the software update function for the user to upgrade the firmware of the switch to the latest software version.

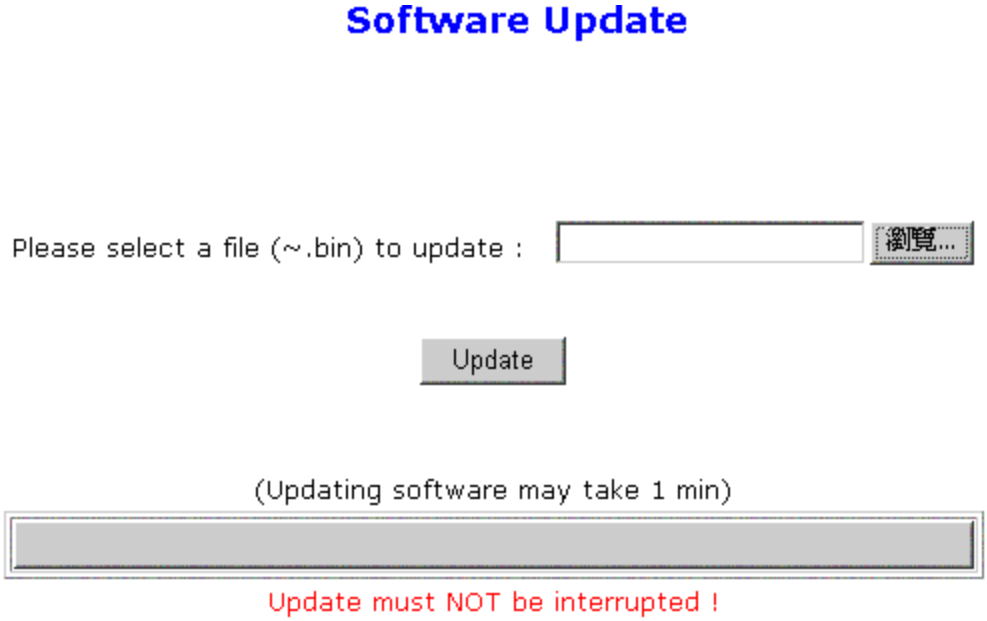


Click this function and press the <Yes> button, then you will enter next two pages to complete the software updating procedures. You must complete the updating procedure.

Note:

After pressing <Yes>, if you encounter any problems or you want to quit the updating you must turn off the power to the switch for more than 5 seconds and turn it on to resume the management operation.

Wait around 5 seconds and then click the <Go> button to enter software update page.


Software Update
Please select a file (~.bin) to update :
瀏覽...
Update
(Updating software may take 1 min)
Update must NOT be interrupted !

Click the <Browse> button to search for the file on your management host.
Click the <Update> to start the updating.

3.4.5 Logout

Besides the Auto Logout Timer function described in the section of System Configuration, the switch also allows the user to logout manually by performing the Logout function.

If no action and no key is stroke as well in any function screen more than the minutes you set up in Auto Logout Timer, the switch will have you logout automatically. Or press the <Logout> button in Logout function to exit the system manually.